

FEB 16 1984

ALEXANDER L. STEVAS.
CLERK

No. 83-1301

**In the
Supreme Court of the United States**

OCTOBER TERM, 1983

MILGO ELECTRONIC CORPORATION, ET AL.,
PETITIONERS,

v.

CODEX CORPORATION, ET AL.,
RESPONDENTS.

**SUPPLEMENTAL APPENDIX TO
PETITION FOR A WRIT OF CERTIORARI TO
THE UNITED STATES COURT OF APPEALS
FOR THE FIRST CIRCUIT**

MARCUS E. COHN, P.C.
CORNELIUS J. MOYNIHAN, JR., P.C. *
PEABODY & BROWN
One Boston Place
Boston, Massachusetts 02108
(617) 723-8700
Attorneys for the Petitioners

* Attorney of Record

TABLE OF CONTENTS

	Page
Appendix I	I-1

APPENDIX I

EXCERPTS FROM THE TESTIMONY OF SANG WHANG
BEFORE THE KANSAS DISTRICT COURT

"Q. Would you relate the energy limits of 800 and 1000 hertz as you have defined it in your '023 patent in suit to the rolloff factor and compute for us the rolloff factor that you have specified in your patent by that calculation?

A. Yes, I will. I must also say that during Dr. Beam's deposition, he equated 1000 [Hz] to 800 [Hz] as 25% rolloff and I couldn't help but smiling because that is the theoretical people's point of view, and without having the cosine rolloff or percentage rolloff when I say don't put energy outside the thousand hertz, I don't mean make sure that energy at thousand hertz is at .000001 percent or anything like that. In a practical sense, if it is 1% or 2% of where the major energy is, to me that is practically low enough. That is not going to interfere with any operation.

We don't have to make it .00001 percent according to mathematical theory.

I would like to explain what that eight hundred [Hz] to a thousand [Hz] means if I were to relate that in practical sense in terms of cosine rolloffs or whatever it is, why that means approximately 50% or less. Let me explain that.

Q. Do you need a chart?

A. If I can have some sheets where I can write, please.

MR. JONES: Let the record show the witness is marking on Plaintiff's Exhibit 181.

THE WITNESS: The way my patent teaches, there is a carrier frequency of 1700 hertz. Then the 1 over T [Nyquist passband] of 800 hertz would be from 1300 hertz to 2100 hertz. Now, when I say a

thousand hertz of dependable part of the telephone line, I go from 1200 hertz to 2200 hertz. That is specified in the--called out in the patent, Column No. 14, Line 69, 1200 hertz to 2200 hertz.

Now, if we are band limiting or shaping anywhere, whether using cosine rolloff or triangular rolloff, anything, what I'm interested in is do anything but make sure around this here (indicating), energy is practically negligible. Now, I would consider negligible to be maybe one percent, two percent or lower, I wouldn't consider 0001 percent or anything like that for all practical sense.

Now, if we were just to examine what the hundred percent rolloff would mean in terms of energy at those frequencies, hundred percent rolloff is what Bennett and Davey calls a raised cosine spectrum. It is like a cosine wave except it's raised so there's no negative, but everything is positive. That's where the words "raised cosine spectrum" comes about.

And if this is a cosine sort of function. This is a poor [sic, should be "peak"] amplitude of 1 and that (indicating) is .5, and then this would be 400 hertz. 2500 hertz is where that cosine of 90 degrees comes about, and calculating this angle as a sign [sic, should be "sine"] of $22\frac{1}{2}$ degrees and subtracting from .5, what is that amplitude here? It turns out to be—that amplitude at 2200 hertz, a thousand hertz bandwidth turns out to be .308 volts against 1, and that represents about 9.5 percent power, because power happens to be the square of the voltages.

The power level around this thousand hertz, if I used one hundred percent rolloff, is about ten percent power. Now, that is sufficient power to interfere with operation if telephone lines start to mess that part of the energy (indicating). That's what the problem is.

Now, if I used fifty percent rolloff, which will be steeper rolloff here (indicating), then at the same point, at 2200 cycles, the voltage level is .146. The next one is .146. That is at the fifty percent rolloff. That's hundred percent rolloff (indicating).

So perhaps I can write down here, with hundred percent rolloff at 2200 hundred hertz, the voltage level is 0.308, and that's volts, and the power is 9.5 percent.

At 50% rolloff, at the same point, sinusoidal calculation gives me 0.146 and a power level of 2.14%. In other words, the power at that point is close to 2%.

Now, that is negligible, but even if the telephone line distorts, what comes in here is not going to bother us.

If we want exactly 1%, make sure that the energy over here is 1%, it turns out to be 42.3% rolloff. Now, practically 42.3% rolloff, nobody can design a filter that accurately to make 42.3% rolloff, but I'm just giving you the theoretical limits. What this one does with a voltage limit of point point one, it gives 1% power there.

So using 1 over T 800, but putting the limits within thousand hertz, again being practical, not necessarily .0001%, a couple percent or less, you can come up with equating that into cosine rolloff according to Bennett and Davey, and it comes out to be maybe 50% or less.

Now, Dr. Beam agreed there is some other means of rolloff. If I used a straight line rolloff, I would use the same criteria, make sure there are around a thousand hertz there and power level is less than one or two percent, an insignificant amount so that even the line distortion does not come into play, in interference with my operation. A. IX:5832-5838

Whang further testified:

- Q. Is there anything in that claim which makes it so limited that it would not read upon a 1 over T filter with a hundred percent rolloff?
- A. Just reading the claim itself, no, but it certainly would not be following my teaching of the patent.
- Q. But the claim does not have any restriction of that nature, is that correct?
- A. That's correct.
- Q. Would you look at claim 25 and tell me whether your answer would be the same with respect to that claim?
- A. The same answer will apply, yes. When you take the claim without the specification, just all by itself, yes.
- Q. So it's your belief that somehow limitations should be read into these claims that are expressed not in the claim but in the specifications someplace?
- A. I have to leave that to the judgment of my patent counsel.
- Q. Is there anything in the claim or in the specification of the patent which defines the bandwidth in terms of fifty percent rolloff or less, other than the calculations that you went through for us earlier this morning?
- A. As I said, I did not even know the cosine rolloff, either a hundred percent or fifty percent, like defined in Bennett and Davey and certainly I would not have been able to put that number down, but I was giving the practical guidelines, which, translated back to Bennett and Davey's figures, I said, would be fifty percent or less, but certainly that was the information that I did not have at that time.
- Q. Well, then, you say your invention really is, as it relates to Bennett and Davey terms, could be expressed as a filter having a bandwidth expressed in terms of fifty percent or less rolloff, a 1 over T filter, that is?
- A. Certainly. I cannot claim one hundred percent rolloff as my invention. That was old art.

- Q. Yet Claims 19 and 25, insofar as their language is expressed, do include, within their scope a one hundred percent rolloff, is that correct?
- A. If you separate that claim from the specifications altogether, yes. A. IX:5791-5792
-